

ALGEBRA PAST HSC QUESTIONS...

2009

14 If $A = 6x + 10$, and x is increased by 2, what will be the corresponding increase in A ?

- (A) $2x$
- (B) $6x$
- (C) 2
- (D) 12

15 Which of the following correctly expresses n as the subject of $v = \frac{3mn^2}{r}$?

- (A) $n = \pm \frac{\sqrt{rv}}{3m}$
- (B) $n = \pm r\sqrt{\frac{v}{3m}}$
- (C) $n = \pm \frac{r\sqrt{v}}{3m}$
- (D) $n = \pm \sqrt{\frac{rv}{3m}}$

(a) Simplify $5 - 2(x + 7)$.

2

(b) The mass of a sample of microbes is 50 mg. There are approximately 2.5×10^6 microbes in the sample.

2

In scientific notation, what is the approximate mass in grams of one microbe?

2008

1 Which expression is equivalent to $12k^3 \div 4k$?

- (A) $3k^2$
- (B) $3k^3$
- (C) $8k^2$
- (D) $8k^3$

(d) Solve $\frac{5x+1}{2} = 4x-7$.

3

9 What is the value of $\sqrt{\frac{x+2y}{8y}}$ if $x=5.6$ and $y=3.1$, correct to 2 decimal places?

- (A) 0.69
- (B) 2.62
- (C) 2.83

(a) The number of penguins, P , after t years in a new colony can be found using the following formula.

$$P = a \times 2^t$$

(i) If there are 24 penguins after two years, find the value of a .

2

(ii) How many years will it take for the number of penguins to first exceed 1500?

2

2007

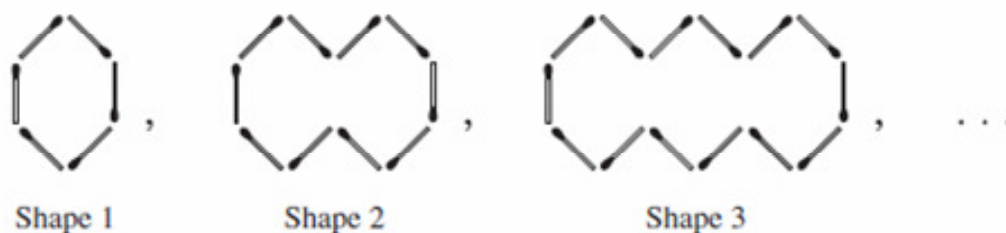
1 What is 0.000 000 326 mm expressed in scientific notation?

- (A) 0.326×10^{-6} mm
- (B) 3.26×10^{-7} mm
- (C) 0.326×10^6 mm
- (D) 3.26×10^7 mm

14 Which expression is equivalent to $3x^2(x+8) + x^2$?

- (A) $3x^3 + x^2 + 8$
- (B) $3x^3 + 25x^2$
- (C) $4x^3 + 32x^2$
- (D) $24x^3 + x^2$

- 18 Chris started to make this pattern of shapes using matchsticks.



If the pattern of shapes is continued, which shape would use exactly 486 matchsticks?

- (A) Shape 96
 (B) Shape 97
 (C) Shape 121
 (D) Shape 122
- 19 Which of the following correctly expresses T as the subject of $B = 2\pi\left(R + \frac{T}{2}\right)$?

- (A) $T = \frac{B}{\pi} - 2R$
 (B) $T = \frac{B}{\pi} - R$
 (C) $T = 2R - \frac{B}{\pi}$
 (D) $T = \frac{B}{4\pi} - \frac{R}{2}$